

Claims

1. A plate heat exchanger including a plate package (P), which includes a number of first heat exchanger plates (A) and a number of second heat exchanger plates (B), which are permanently joined to each other and arranged beside each other in such a way that a first plate interspace (1) is formed between each pair of adjacent first heat exchanger plates (A) and second heat exchanger plates (B), and a second plate interspace (2) between each pair of adjacent second heat exchanger plates (B) and first heat exchanger plates (A), wherein the first plate interspaces (1) and the second plate interspaces (2) are separated from each other and provided beside each other in an alternating order in the plate package (P),  
15 wherein substantially each heat exchanger plate (A, B) has at least a first porthole (5) and a second porthole (5), wherein the first portholes (5) form a first inlet channel (6) to the first plate interspaces (1) and the second portholes (5) form a first outlet channel (7) from the first plate interspaces (1), and  
20 wherein the plate package includes a separate space (11) for each of said first plate interspaces (1), which space (11) is closed to the second plate interspaces (2),  
25 characterised in that said separate space (11) communicates with the first inlet channel (6) via an inlet nozzle (13, 15), which forms a throttling with significantly reduced flow area, and with the respective first plate interspace (1) via an outlet nozzle (14),  
30 which forms a throttling with significantly reduced flow area.  
  
2. A plate heat exchanger according to claim 1, characterised in that said separate space is provided in the proximity of the inlet channel.

3. A plate heat exchanger according to any one of claims 1 and 2, characterised in that said separate space has been produced through compression-moulding of the heat exchanger plates (A, B).

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4. A plate heat exchanger according to any one of the preceding claims, characterised in that a least one of said nozzles is formed by a respective hole (13, 14), which extends through each of said second heat exchanger plates (B).

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5. A plate heat exchanger according to any one of the preceding claims, characterised in that the inlet nozzle is formed by a respective hole (13), which extends through each of said second heat exchanger plates (B).

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6. A plate heat exchanger according to any one of the preceding claims, characterised in that the outlet nozzle is formed by a respective hole (14), which extends through each of said second heat exchanger plates (B).

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7. A plate heat exchanger according to claims 5 and 6, characterised in that said separate space (11) is provided between a respective pair of adjacent second heat exchanger plates (B) and first heat exchanger plates (A).

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8. A plate heat exchanger according to any one of the preceding claims, characterised in that each of said heat exchanger plates (A, B) includes a central extension plane (16), an upper plate plane (17) on one side of the central extension plane (16) and a lower plate plane (18) on the other side of the central extension plane (16).

9. A plate heat exchanger according to claim 8, characterised in that each of said second heat exchanger plates (B) includes an upper surface area (21), which extends around said first porthole (5) and which delimits said separate space (11),

wherein the upper surface area (21) is located at the level of the upper plate plane (17).

5 10. A plate heat exchanger according to claims 6 and 9, characterised in that the hole (14) of the outlet nozzle extends through the upper surface area (21).

10 11. A plate heat exchanger according to claim 10, characterised in that the heat exchanger includes an end plate (3), which is provided adjacent to one of said second heat exchanger plates (B) in such a way that it closes the hole (14) of the outlet nozzle of this second heat exchanger plate (B).

15 12. A plate heat exchanger according to any one of claims 9 to 11, characterised in each of said second heat exchanger plates (B) includes a lower surface area (22), which extends around said first porthole (5) between the first porthole and the upper surface area (21), wherein the lower surface area (22) is located at the level of the second lower plate plane (18).

20 13. A plate heat exchanger according to claims 7 and 12, characterised in that the hole (13) of the inlet nozzle extends through the lower surface area (22).

25 14. A plate heat exchanger according to any one of claims 8 to 13, characterised in that each of said first heat exchanger plates (A) includes a lower surface area (23), which extends around said first porthole (5) and which delimits said separate space (11), wherein the lower surface area (23) is located at the level of the lower plate plane (18).

30 35 15. A plate heat exchanger according to claims 9 and 14, characterised in the upper surface area (21) of said second heat exchanger plates (B) is located partly opposite to the lower surface area (23) of said first heat exchanger plates (A) for forming said separate space (11) between these surface areas (21, 23).

16. A plate heat exchanger according to claims and 15, characterised in that the inlet nozzle is located opposite to the lower surface area (23) of said first heat exchanger plates (A).

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17. A plate heat exchanger according to claim 16, characterised in that the outlet nozzle, with regard to the extension plane (16), is displaced in relation to the lower surface area (23) of said first heat exchanger plates (A).

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18. A plate heat exchanger according to any one of claims 14 to 17, characterised in that each of said first heat exchanger plates (A) includes an upper surface area (24), which extends around said first porthole (5) between the first porthole and the lower surface area (23), wherein the upper surface area (24) is located at the level of the upper plate plane (17).

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19. A plate heat exchanger according to claims 12 and 18, characterised in that the lower surface area (22) of said second heat exchanger plates (B) is located partly opposite to the upper surface area (24) of said first heat exchanger plates (A), wherein these two surface areas (22, 24) partly abut each other in the plate package (P).

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20. A plate heat exchanger according to any one of the preceding claims, characterised in that said first plate interspaces (1) form first passages for a cooling agent and said second plate interspaces (2) form second passages for a fluid, which is adapted to be cooled by the cooling agent.

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21. A plate heat exchanger according to any one of the preceding claims, characterised in that substantially each heat exchanger plate (A, B) has at least a third porthole (5) and a fourth porthole (5), which extend through the plate package, wherein the third portholes (5) form a second inlet channel (8) to the

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second plate interspaces (2) and the fourth portholes (5) form a second outlet channel (9) from the second plate interspaces (2).

22. A plate heat exchanger according to any one of the preceding claims, characterised in that said heat exchanger plates (A, B) in the plate package (P) are connected to each other through brazing.

23. A plate heat exchanger according to any one of the preceding claims, characterised in that said separate space (11) is delimited by means of at least one ring (31, 32), which extends around the inlet channel (6).

24. A plate heat exchanger according to claim 23, characterised in that each of said rings (31, 32) is provided in a ring groove in the adjacent heat exchanger plate.